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Agile Management and Agile Organization Concept: A Bibliometric Analysis and Future Directions

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ABSTRACT

This study aims to examine the trends and research gaps in the literature by addressing the concepts of agile management and agile organization from a bibliometric perspective. 867 articles in the Web of Science database between 1997 and 2024 were analyzed using VOSviewer software. The study examined the historical development of agile management and organization, prominent themes, keywords and scientific contributions. The findings show that agile has found application in a wide range of fields, especially in software development and project management. In particular, analyses of co-authorship, citations and bibliographic matches revealed patterns of collaboration between researchers and key thematic areas in the literature. Keyword analysis shows that agile project management and organizational change are widely studied topics. The study systematically assesses the existing literature in the field of agile management and organization, while suggesting new directions for future research. It is also emphasized that topics such as hybrid management models and the integration of agile methods into other disciplines should be further explored. In this context, the study aims to fill the gaps in the literature and contribute to strategic decision-making processes.

Keywords: Agility, Agile Management, Agile Organization, Agile Project Management.

Introduction

Globalization, digital transformation and increasing competition have created new dynamics that require organizations to go beyond traditional management approaches. In this context, agility has emerged as a solution to the need for flexibility and adaptability in response to rapidly changing conditions. Agility is an approach that combines competitive advantages such as rapid adaptation to innovations, flexibility, high-quality and personalized products, responsiveness to changing cultural dynamics, and mobility of core functions through effective resource use. This approach aims to provide customers with products and services that are flexible and tailored to their needs (İleri & Soylu, 2010). This concept, which first emerged in the field of software development and information technologies, has been widely adopted in many different fields such as project management, information systems and organizational processes.

While agile management addresses planning, implementation and evaluation processes with a dynamic approach, it aims to provide faster and more effective solutions compared to traditional methods (De Borba et al., 2019). Agile organizations stand out with their decentralized decision-making mechanisms, transparent collaboration and structures that encourage innovation. Agile approaches, which have

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proven to be successful by being implemented by globally recognized companies, are nowadays adopted as a model in different sectors.

Most of the research on agile management and organization in the literature focuses on software development and project management. However, there is a limited number of studies on the impact of these concepts in areas such as organizational management, leadership and sustainability. Therefore, the integration of agile into different disciplines and addressing the challenges encountered in these processes emerges as an important need in the literature.

This study aims to address the concepts of agile management and agile organization from a bibliometric perspective and to reveal the main trends, gaps and new directions in the literature. In this context, the study examines the historical development of agile management and organization concepts, their application areas in different sectors and thematic concentrations in the literature. Addressing the concept of agility in a broad perspective provides a framework that will contribute to both academic and applied studies.

In today's fast-changing and uncertain business world, agile management and agile organization concepts play a critical role in providing competitive advantage to businesses. However, there is a lack of a systematic assessment of how these concepts have been addressed in the literature, which aspects have been investigated and what gaps exist for future studies. The problem that this research seeks to answer reveals the need for a comprehensive bibliometric review that will analyze the existing body of knowledge of agile management and organization concepts in a holistic manner and provide direction for future research.

Literature Review

In the modern business world, rapidly changing market conditions and increasing competition have led organizations to more flexible and adaptive management approaches. In this context, agile management stands out as an innovative management approach that enables organizations to respond quickly to changing demands. The advantages offered by agile management and the challenges it faces have significant impacts on the functioning and sustainable success of agile organizations. In this conceptual framework, the basic principles of agile management, its advantages, disadvantages and the structure of the agile organization will be discussed.

Agile Management

In recent years, growing management and organizations have developed various methods and practices in order to produce fast and effective solutions to the complex and dynamic processes they face. One of the prominent approaches in this context is agility. Agility has been adopted by different sectors and has acquired various definitions in this direction. In general terms, it is defined as the ability to adapt to changing conditions and respond quickly to these conditions (Muhammad et al., 2021).

Agile management represents a dynamic and flexible approach to project and organization management, emphasizing adaptation, collaboration and iterative processes. This method, which was founded in the software development sector, was first formalized with the "Agile Manifesto" published in 2001. The Manifesto emphasized interpersonal interaction, collaboration with employees, software, customers, and responding to change as more important than traditional planning processes (Madsen, 2020)

The concept of agility, especially in the field of computer technologies and software, has emerged as a solution to the increasing complexity in these sectors. Instead of traditional and rigid regulations, software engineers and project managers have developed a quality-oriented way of working with open-ended and discussion-based goals (Dick et al., 2023). This approach has been successfully implemented by globally recognized companies such as Google, Spotify, Netflix, Bosch and Tesla and has become a

model for other organizations (Kreye et al., 2024). The principles of the agile manifesto are as follows (Fowler & Highsmith, 2001):

1. Our top priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcoming changing requirements even in the final stages of development. Agile processes use change for the customer's competitive advantage.
3. Deliver working software as often as a few weeks to a few months; opt for shorter timeframes.
4. Businesspeople and developers must work together on a daily basis throughout the project.
5. Build your projects around motivated individuals, give them the environment and support they need and trust them to get the job done.
6. The most effective and efficient way to transfer information within a development team is face-to-face.
7. Working software is the primary measure of progress.
8. Agile processes encourage sustainable development. Sponsors, developers and users should be able to maintain a steady pace indefinitely.
9. Constant attention to technical excellence and good design increases agility.
10. Simplicity, the art of maximizing the amount of work not done, is essential.
11. The best architectures, requirements and designs emerge from self-organized teams.
12. The team periodically reflects on how it can be more effective and then adjusts and adjusts its behavior accordingly.

In software, these principles generalize customer-centric software development processes to make them more flexible, collaborative and sustainable. These principles optimize project management through approaches such as adapting to change, ensuring frequent and regular delivery of working software, and face-to-face communication between individuals. Relying on motivated team members, encouraging technical excellence and good design, minimizing complexity and emphasizing the contribution of self-organizing systems are the cornerstones of the process. In addition, regular performance evaluation and improvement of systems ensures continuous improvement. These principles enable software projects to be developed in a more efficient, customer-oriented and sustainable way. Agile management principles, though rooted in software development, have been successfully adapted across various fields due to their flexibility and efficiency. Key principles include individual commitment to quality, fostering accountability and shared responsibility; early testing and fast learning, which enable quick issue resolution; and transparent, real-time communication for effective decision-making. Agile also emphasizes proactive risk management, continuous improvement, and ongoing skill development to ensure teams remain adaptable and capable (Cojocaru et al., 2022). These principles aim to enable businesses to adapt to rapidly changing environmental conditions, to provide opportunities for improvement by detecting errors at an early stage, and to strengthen cooperation by providing transparency in team communication. It also aims to improve overall organizational performance by increasing the competencies of employees. Within the framework of these benefits, Scrum stands out as the most frequently used agile management method. Scrum is an approach that is most widely used in Agile projects and provides project management with an iterative method. Suitable for all types of project processes, Scrum offers a structure that allows teams to identify and prioritize needs and focus on prioritized work that can be delivered in short cycles of two to four weeks (Ahmed & Mohammed, 2019).

Agile project management is an approach that aims to make project processes simpler, more flexible and effective based on the concept of agility. The main objectives of this method are to quickly adapt to changes, continuously innovate, and focus on quality by shortening project processes (Conforto et al., 2014; Loiro et al., 2019). The main objective of agile project management is to adapt quickly to changing needs by prioritizing customer satisfaction and experience, providing continuous communication and collaboration without compromising quality and efficiency. This approach aims to produce customer-

oriented, collaborative and performance-oriented solutions; thus, fast and efficient results are achieved, which are similar to the agile management approach (Özen & Koç, 2023). Research shows that projects using agile methods are 28% more successful than projects managed with traditional methods (Özkan & Mishra, 2019).

In conclusion, agility is a strategic tool that enables organizations to adapt to rapidly changing environmental conditions and create value in the process. In today's business world, adopting agile methods not only increases the success of projects, but also supports organizational sustainability and provides competitive advantage.

Advantages and Disadvantages of Agile Management

Agile methods are based on an iterative development process, notable for their lean approach, flexible structure and prioritization of stakeholder engagement (Marović & Bulatović, 2020). The advantages it provides are also developing in this direction.

Agile management is an approach based on flexibility, stakeholder engagement and customer satisfaction. It reduces costs by quickly adapting to changes in project plans, supports the timely completion of projects and delivers results in line with expectations through regular customer feedback. By giving team members autonomy, it encourages creativity, strengthens trust and provides a competitive advantage. In addition, it increases performance transparency and enables processes to be reviewed (Masood & Farooq, 2017).

It is stated that agile methods offer effective solutions in terms of both speed and quality in today's world, where variable needs and special demands of customers come to the fore with technological advances. These methods contribute to achieving innovative results by providing flexibility and efficiency in the product development process (Özen & Koç, 2021).

Challenges in agile management include documentation gaps, staff training needs, levels of experience and commitment, ensuring effective communication and engagement with stakeholders, role definitions in agile methods, the position of teams in the organization and regulatory requirements. It highlights the importance of further research on the management of projects where agile methods are applied, especially clarifying role definitions in agile setups and focusing on agile organization models in the public sector (Marović & Bulatović, 2020).

Agile Organization

Agility is not only limited to project management but also offers a multidimensional approach in organizational management. Agile organizations are defined as structures that encourage collaboration, decentralized decision-making processes and innovation (Overby et al., 2006). It is stated that these structures provide a strategic advantage by increasing innovation and operational efficiency in terms of leadership and team dynamics (Denning, 2018).

Organizations that adopt agile management stand out with their ability to rapidly reshape business processes and support continuous learning. Agile teams with autonomy, competence and resources effectively combine speed and adaptability. In addition, learning by experimentation, multidisciplinary collaboration and retrospective evaluations are the cornerstones of this approach (Özen & Koç, 2021).

Agile organizations that adapt to changing and complex environmental conditions increase organizational resilience by identifying risks early and reducing their impact. In this way, it enables rapid transformation processes and provides both stability and dynamism with a lean management approach. Especially in areas such as the healthcare sector, agile approaches play a critical role in improving service quality and operational excellence (Roblek et al., 2024).

Methodology

In this study, bibliometric analysis method was applied in order to examine the scientific literature on agile management and agile organization in depth and to reveal the main trends in this field. With this method, an evaluation based on the numerical data in the literature was made to determine the historical development of agile management and agile organization concepts, prominent research areas and important academic contributions to this discipline. The study aims to guide future research by identifying specific gaps in the literature.

Within the scope of the research, 867 articles in the Web of Science (WoS) database with the keywords "Agile Management", "Agile Project Management" and "Agile Organization" on 13.11.2024 and covering all years (1997-2024) were examined. The only limitation for this search was articles only. Book chapters and other works were not included. VOSviewer software was used in the analysis process. Within the scope of the bibliometric analysis, the temporal evolution of the literature was examined by analyzing the annual distribution of publications, while keyword analysis enabled the identification of prominent themes and research foci. Scientific collaboration networks and inter-author relationships were assessed through various co-authorship analyses, and thematic concentrations as well as influential studies were revealed via bibliographic coupling and citation analyses. Furthermore, academic collaborations and contributions at the levels of countries, institutions, and individual authors were visualized to provide a comprehensive understanding of the structural dynamics of the field.

Specifically, co-author country citation analysis was employed to reveal the scientific impact of international collaborations, while the document-based co-author country analysis highlighted the productivity of these cross-border academic partnerships. The co-author country linkage analysis further demonstrated the extent and intensity of collaboration between authors from different countries. At the institutional level, co-author institutional citation analysis measured the academic influence of inter-institutional research, whereas co-author institutional document analysis identified the volume of joint publications across institutions. The institutional linkage analysis shed light on the existence and strength of collaborative ties between different academic entities. Similarly, author-level collaboration was examined through co-author citation analysis, which indicated the scholarly impact of joint publications based on citation frequency. Co-author document analysis provided insights into the number of shared publications between authors, and co-author linkage analysis captured the frequency and pattern of co-authorships by identifying how often two or more authors appeared together in the same publications. In light of these analyses, the general structure and emerging trends within the agile management and organization literature were discussed in detail, offering valuable insights into the evolution, collaboration dynamics, and thematic orientation of the field.

Bibliometric analysis process involves the collection and organization of bibliographic data followed by the application of techniques such as performance analysis, science mapping and network analysis. This method, which mostly utilizes international databases such as Scopus and Web of Science, allows the creation of visual maps and network clustering through software such as VOSviewer (Passas, 2024).

VOSviewer is a software developed specifically for bibliometric analysis and is used to visualize citation data, co-authorship relationships and other scientific collaboration networks. The software's ability to process large data sets and produce clear and meaningful visualizations from these data makes it preferred for identifying research trends and academic collaboration networks (Donthu et al., 2021).

The bibliometric analysis in this study systematically evaluates the existing literature on agile management and organization while also offering insights for future research topics.

Findings

The findings section examines various aspects of the literature on agile management and organization and reveals important trends, collaboration networks and academic contributions in the light of the data

obtained as a result of bibliometric analyses. In this section, links between authors, institutions, countries and references are provided.

Table 1. Distribution of Articles According to Web of Science Categories

Web of Science Category	Number of Records	% 867
Governance	240	%27.682
Information Systems	141	%16.263
Software Engineering	132	%14.225
Computer Science Theory Methods	117	%13.495
Business	107	%12.341
Electrical and Electronics Engineering	87	%10.035
Interdisciplinary Applications in Computer Science	79	%9.112
Industrial Engineering	66	%7.612
Operations Research Management Science	47	%5.421
Computer Science Artificial Intelligence	39	%4.498

Source: Web of Science

When we look at the distribution of studies on agile management and agile organizations according to Web of Science categories, it is seen that most studies are in the field of management. This is followed by information systems, software engineering and computer science theory methods with the highest number of applications and citations. Business administration ranks fifth. As can be seen from the table, outside the field of management, agile management and agile organization have been frequently researched on computer technologies and engineering processes.

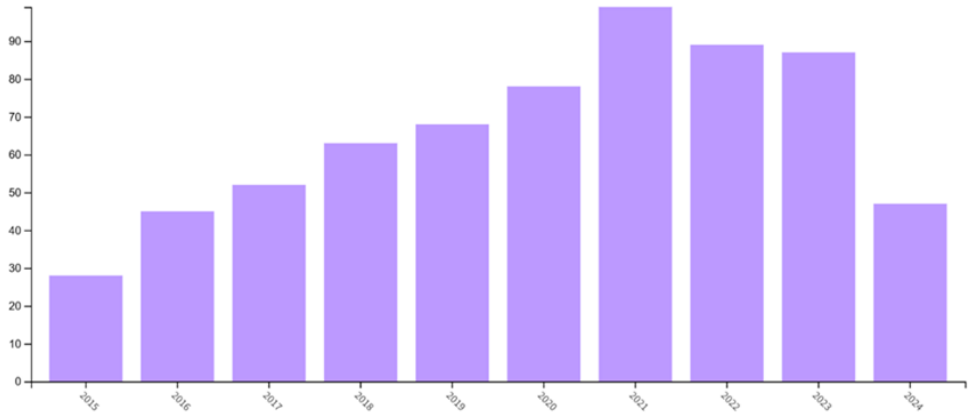

Chart 1. Distribution of Articles by Years

Source: Web of Science

As shown in Chart 1, studies in the field of agile management steadily increased from 2015 to 2021, reaching their peak in 2021. However, there was a significant decline after 2021, and by 2024, the number of studies had dropped to its lowest level.

Co-authorship Analysis

Coauthorship analysis helps to reveal the strength and extent of collaborations within and across disciplines. This method provides insights into power dynamics and knowledge diffusion by identifying authors and peripheral actors in research networks (Glänzel & Schubert, 2004).

While conducting co-authorship analyses, the minimum number of articles of a co-author was set as 1 and the minimum number of citations as 10.

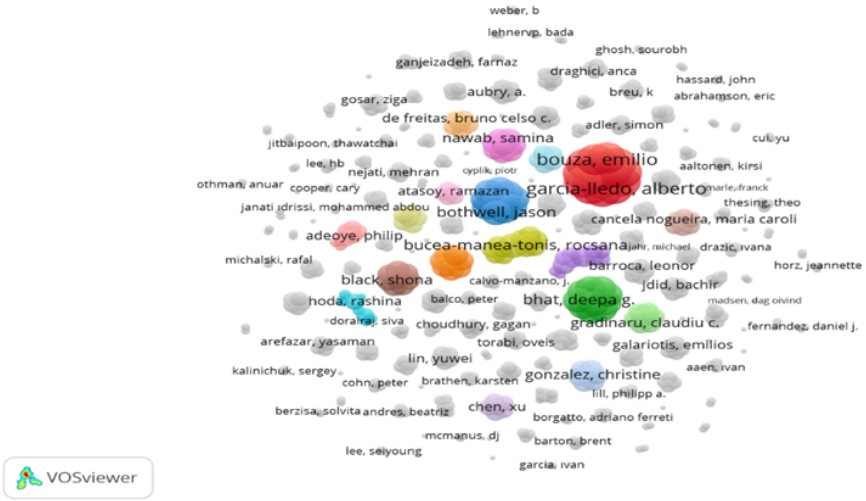

Figure 1. Co-author link analysis

Co-author linkage analysis measures collaboration and links between different authors. This analysis shows whether two or more authors appear together in the same article and the frequency of these partnerships. As a result of the analysis, 560 out of 2280 authors were linked (Figure 1). The authors with the highest link strength were González Del Castillo J., Martín- Delgado M.C., Martín Sánchez F.J., Martínez-Sellés M., Molero García J.M., Moreno Guillén S., Rodríguez-Artalejo F.J., Ruiz-Galiana J., Cantón R, De Lucas Ramos P., García-Botella A., García-Lledó A., Hernández-Sampelayo T., Gómez-Pavón J., Bouza E. The common work of these authors has been in the field of health. Based on the difficulties experienced during the Covid-19 period, they expressed the need for pandemic and disaster laws. They emphasized that these laws and the necessary regulations should be managed and executed in an "agile" manner (González Del Castillo et al., 2022).

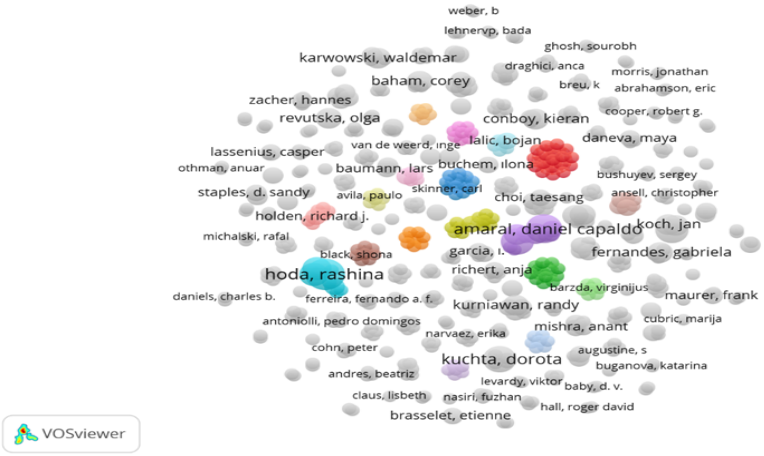

Figure 2. Co-author document analysis

Co-author document analysis shows how many different publications the authors are involved in together. When the co-author analysis with 560 links between them is analyzed in terms of documents, Rashina Hoda stands out with 7 documents (Figure 2). When the author's studies are examined, it is seen that she has many studies on "agile project management" in the field of software engineering.

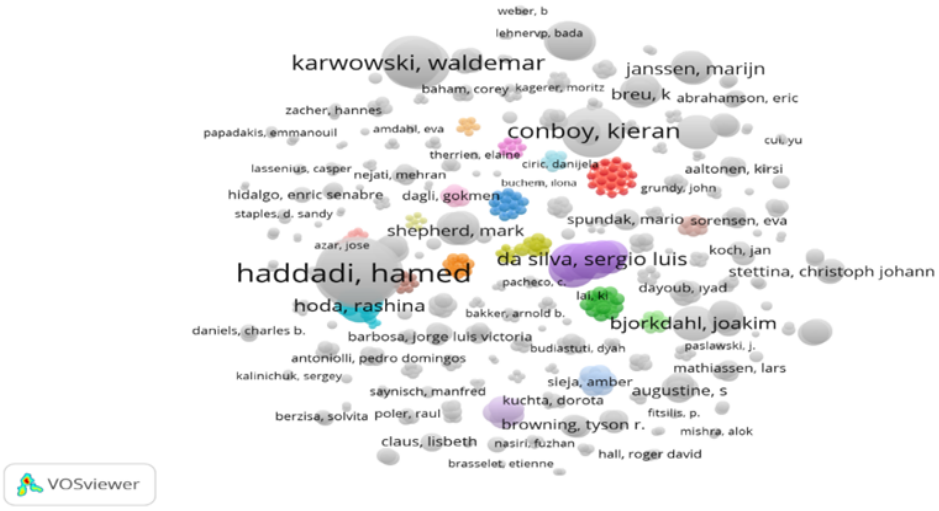

Figure 3. Co-author citation analysis

Co-author citation analysis shows the scientific impact of joint studies and how many citations these studies have received. When the citation analysis of the co-authors is evaluated, Zhang, C., Patras, P., Haddadi, H. stands out with 867 citations from their study in 2019 (Figure 3). This study, like the study with a high impact factor, was conducted in the field of engineering. In the study, deep learning and "agile network management" were mentioned in the management of traffic in networks with the developing technology (Zhang et al., 2019).

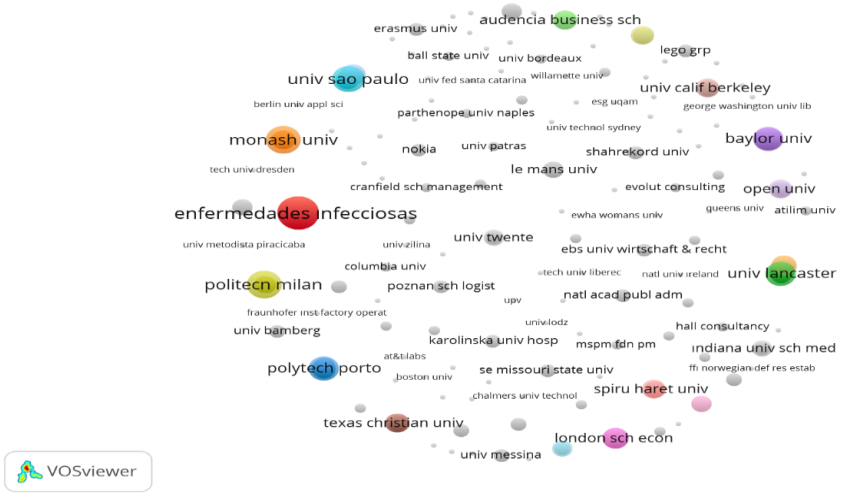

Figure 4. Co-author institutional link analysis

The co-author institutional linkage analysis shows whether researchers from two or more institutions collaborate. The analysis found links between 314 out of 1055 institutions (Figure 4). The first institutions that stand out are González Del Castillo et al, (2022), San Carlos University Clinical Hospital, Torrejón University Hospital, San Carlos University Clinical Hospital, Gregorio Marañón General University Hospital, University of Alcalá de Henares, Autonomous University, Ramón y Cajal Hospital and Ramón y Cajal Institute for Healt Research, Gregorio Marañón General University Hospital, San Carlos University Clinical Hospital, Prince of Asturias Hospital, Gregorio Marañón General University Hospital, Central Hospital of the Red-Cross. Alfonso X el Sabio University and the Clinical Microbiology and Infectious Diseases Service of the Gregorio Marañón General University Hospital. Apart from these institutions, Monash University and Politecnico di Milano are at the forefront.

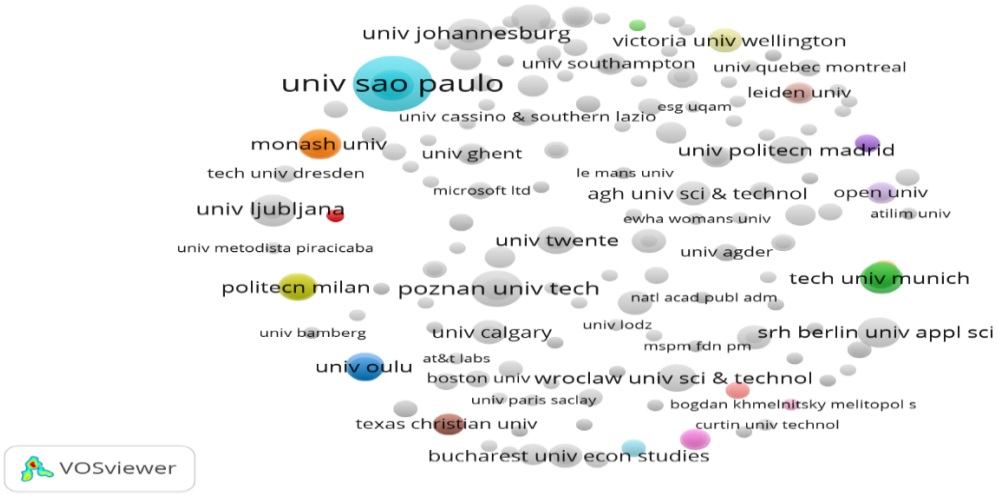

Figure 5. Co-author institutional document analysis

Co-author institutional document analysis shows how many joint publications researchers from different institutions are involved in. It evaluates the publication productivity and collaboration intensity between institutions. When the co-author institutional document analysis is analyzed, University of São Paulo ranks first with 21 documents, 655 citations and 8 link strengths. It is followed by Poznan University of Technology with 9 documents, 55 citations and 2 link strengths. In third place is Ljubljana University with 7 documents, 62 citations and 3 link strengths (Figure 5).

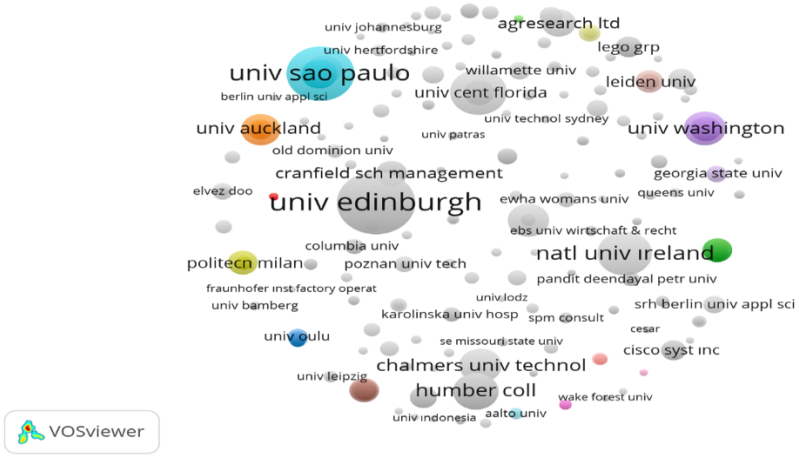

Figure 6. Co-author institutional citation analysis

Co-author institutional citation analysis shows the scientific impact of collaborative work between institutions. As a result of the analysis, The University of Edinburgh ranks first with 878 citations. This is followed by Imperial College London with 872 citations and University of São Paulo with 655 citations (Figure 6).

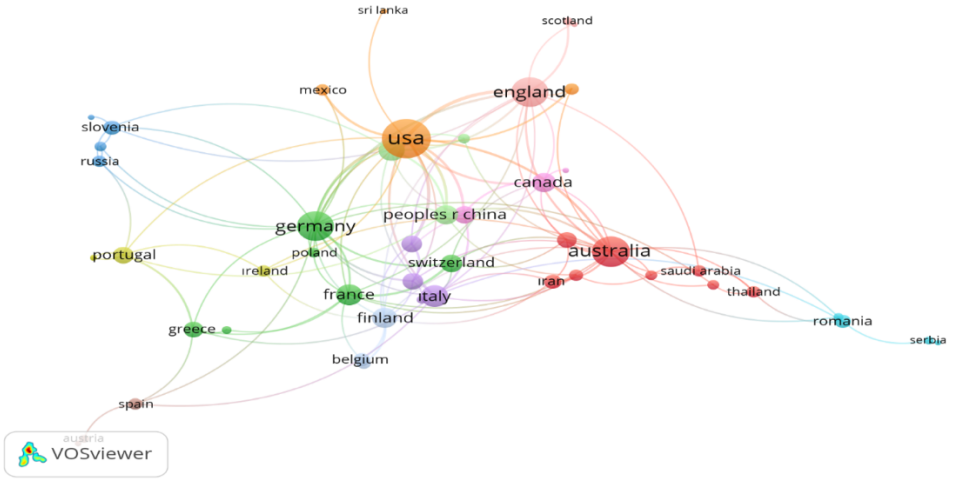

Figure 7. Co-author country link analysis

Co-author-country linkage analysis shows whether authors collaborate across countries and the intensity of these collaborations. The analysis revealed a strong link between 49 out of 81 countries (Figure 7). Among these countries, the United States ranked first with 157 documents, 3033 citations and 404 link strengths, Australia with 34 documents, 304 citations and 27 link strengths, and the United Kingdom with 47 documents, 1406 citations and 25 link strengths.

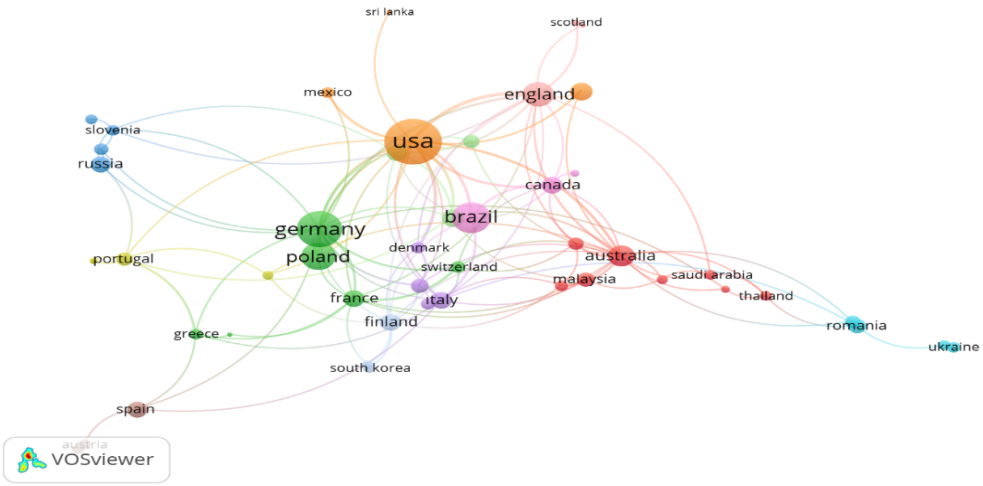

Figure 8. Co-author country document analysis

When the co-author country analysis is analyzed in terms of documents, it shows how productive the academic cooperation between countries is. As a result of the analysis, the United States ranks first with 157 documents. In second place is Germany with 99 documents. In third place is Brazil with 70 documents (Figure 8).

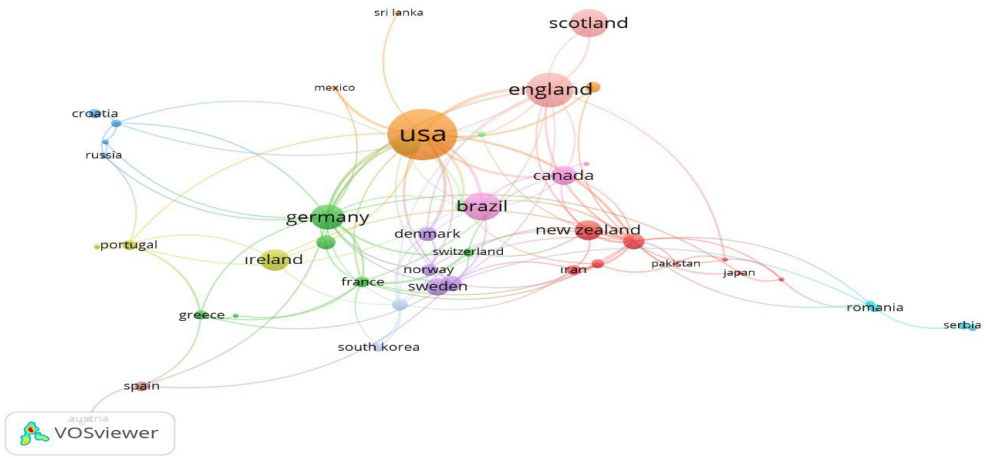

Figure 9. Co-author country citation analysis

Co-author country citation analysis shows the scientific impact of collaborative work between countries. As a result of the analysis, the United States ranks first with 3033 citations. The countries that come to the forefront in other country analyses also show themselves in this analysis. The United Kingdom ranks second and Brazil ranks third (Figure 9).

Citation Analysis

This analysis is used to examine collaboration between researchers, publications and institutions, interdisciplinary interactions and scholarly communication networks. Citation analysis shows the flow of knowledge in a network structure by evaluating similarities between documents, authors or sources and helps to understand paradigm shifts that occur over time (Osareh, 1996; Zupic & Cater, 2015). In this study, the minimum number of citations of a sources was set as 10 while conducting citation analysis.

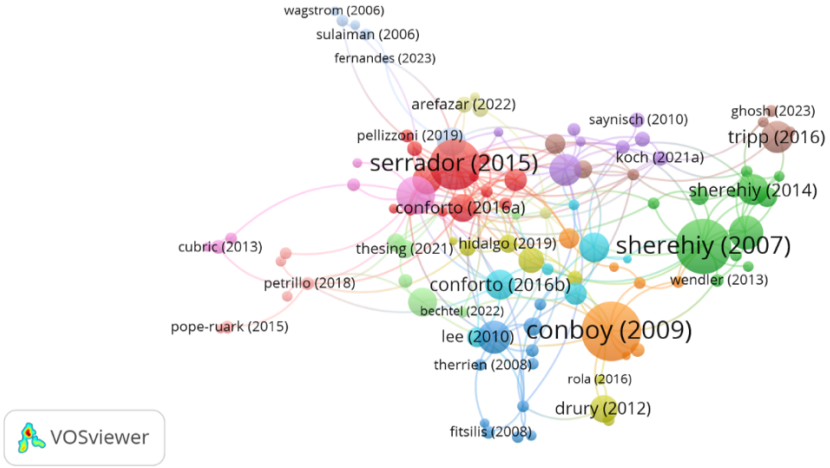

Figure 10. Document citation analysis

Document citation analysis identifies the most cited documents and provides an understanding of which studies scientific research is built on. The analysis identified 191 out of 867 linked articles and revealed a strong citation network among 101 of them (Figure 10). The prominent documents in this analysis were Conboy (2009), "Agility from first principles: Reconstructing the concept of agility in information systems development", Sherehiy (2007), "A review of enterprise agility: Concepts, frameworks, and attributes" and Serrador (2015), "Does Agile work?-A quantitative analysis of agile project success". In terms of connection strength, the prominent topics in these documents were the conceptual framework of agile management and the analysis of its success (Conboy, 2009; Sherehiy et

al., 2007; Serrador & Pinto, 2015). In terms of link strength, the prominent document was Conforto (2014), "Can agile project management be adopted by industries other than software development?". In this document, it is presented whether agile management can provide the success that it has achieved in the field of software development and information technologies and in other fields (Conforto et al., 2014).

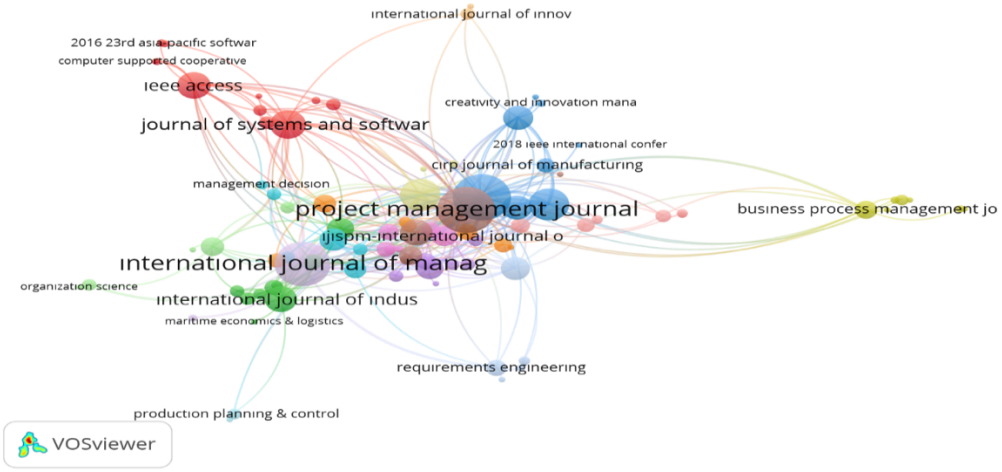

Figure 11. Journal attribution link strength analysis

Journal citation link strength analysis visualizes which journal are close to each other in the literature and which studies influence each other. While analyzing the journal citations, the minimum number of articles was selected as 1 and the minimum number of citations was kept as 10. 161 out of 639 journals were found to be connected. A strong citation network was found between 94 journals.

When the journals are analyzed in terms of citation link strength (Figure 11), International Journal of Project Management ranks first with 5 documents, 519 citations and 76 link strength. In second place is Project Management Journal with 7 documents, 282 citations and 76 link strength. The International Journal of Managing Projects in Business follows with 11 documents, 156 citations and 70 link strength.

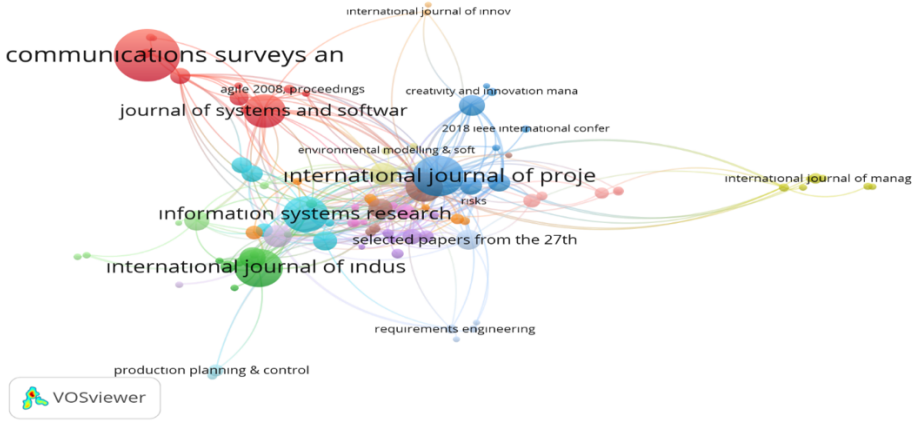

Figure 12. journal citation analysis

Journal citation analysis shows the scientific impact of the journal and how much it is used by the academic community. When the journals are analyzed according to the number of citations (Figure 12), the first journal is IEEE Communications Surveys & Tutorials with 1 document, 867 citations and 1 link. Then came the International Journal of Project Management with 5 documents, 519 citations and 76

links. The third journal is International Journal of Industrial Ergonomics with 2 documents, 466 citations and 23 links.

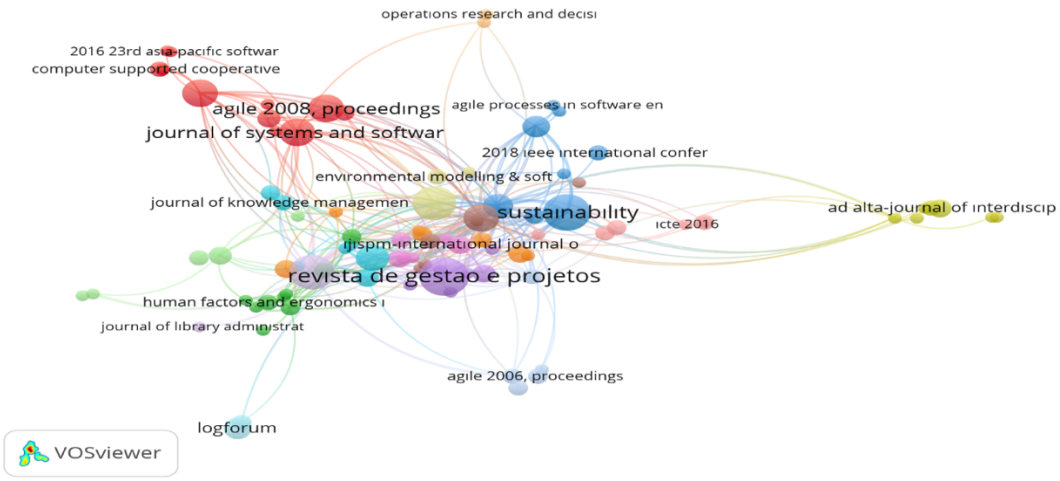

Figure 13. Journal document analysis

Journal document analysis refers to the number of documents referenced by the journal. When the journals are analyzed in terms of the number of documents in the citation analysis (Figure 13), Revista de Gestao e Projetos came first with 13 documents, 18 citations and 18 link strengths. Sustainability followed with 12 documents, 100 citations and 37 link strength. In third place was the International Journal of Managing Projects in Business with 11 documents, 156 citations and 70 link strengths.

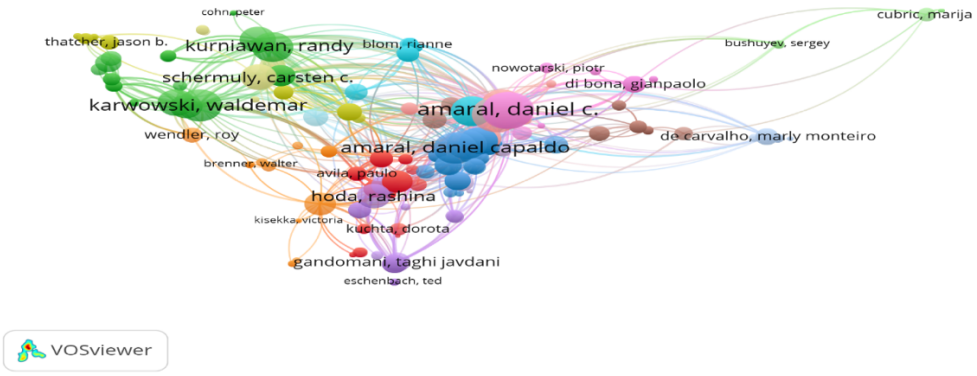

Figure 14. Author attribution link strength analysis

Author citation link strength analysis allows to understand which authors have more scientific interactions and have a strong place in the literature. The minimum number of articles for authors was set to 1, while the minimum number of citations was kept at 10. Out of 2280 sources, 560 were found to be linked. Among 259 authors, a strong link was found. When the citation link strength analysis of the authors is analyzed (Figure 14), Amaral, Daniel C. came first with 11 documents, 448 citations and 209 link strengths. In second place was Conforto, Edivandro C. with 3 documents, 268 citations and 119 link strength. Then Da Silva, Sergio Luis with 3 documents, 281 citations and 114 link strength.

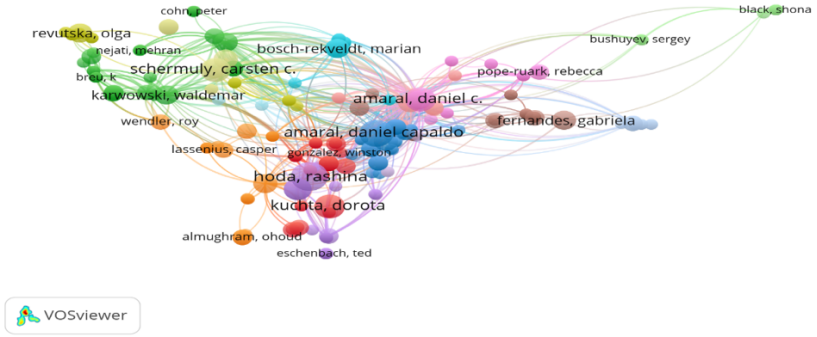

Figure 15. Author document analysis

Author document analysis is used to identify the most prolific authors and their scientific contributions. According to the citation analysis (Figure 15), Daniel C. Amaral ranks first with 11 documents, Rashina Hoda ranks second with 7 documents and Carsten C. Schermuly ranks third with 5 documents.

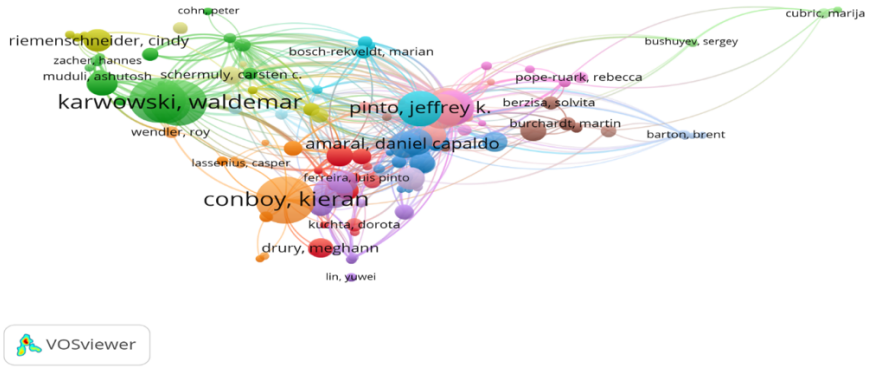

Figure 16. Author citation analysis

Author citation analysis analyzes the total number of citations to all of an author's work. When the number of author citations is analyzed (Figure 16), Zhang, Chaoyun, Patras, Paul and Haddadi, Hamed ranked first with 867 citations, Conboy, Kieran ranked second with 518 citations and Karwowski, Waldemar ranked third with 491 citations.

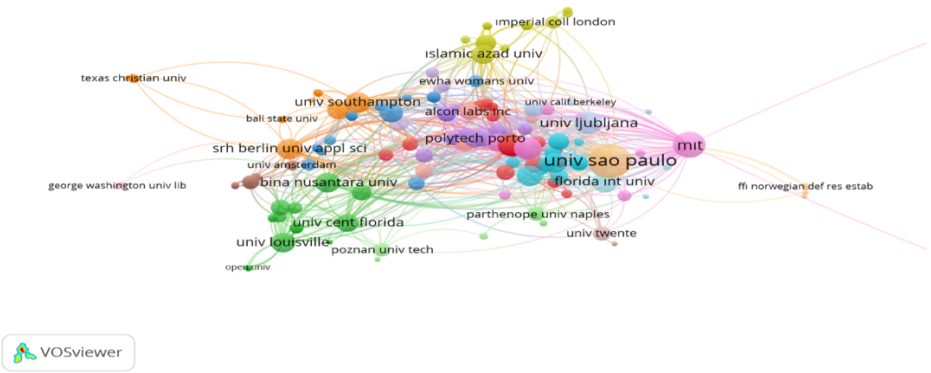

Figure 17. Institution attribution link strength analysis

Institutional citation link strength analysis analyzes the strength of citation links of institutions with other institutions. The minimum number of articles for institutions was chosen as 1. 314 out of 1055 institutions were found to be connected. A strong network was found between 188 institutions.

In terms of link strength (Figure 17), University of São Paulo ranks first with 21 documents, 655 citations and 179 link strengths. In second place is the Massachusetts Institute of Technology with 4 documents, 192 documents and 87 link strengths. The University of Ljubljana follows with 7 documents, 62 citations and 63 link strengths.

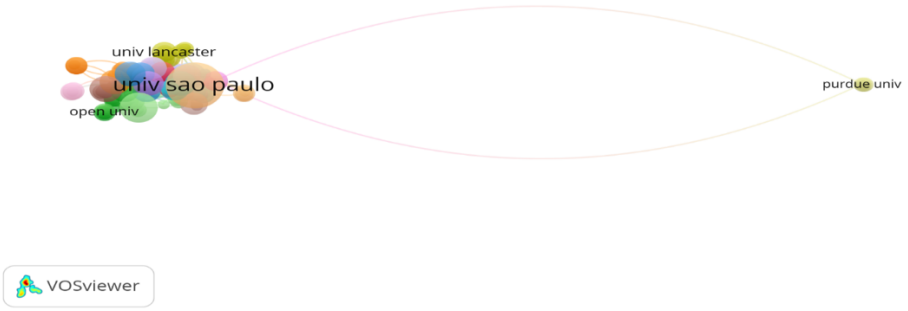

Figure 18. Institution document analysis

The institutional document analysis analyzes the total number of documents produced by an institution. According to the document analysis of institutions (Figure 18), the University of São Paulo ranks first with 21 documents, followed by Poznan University of Technology with 9 documents. This is followed by The University of Ljubljana and University of Johannesburg with 7 documents.

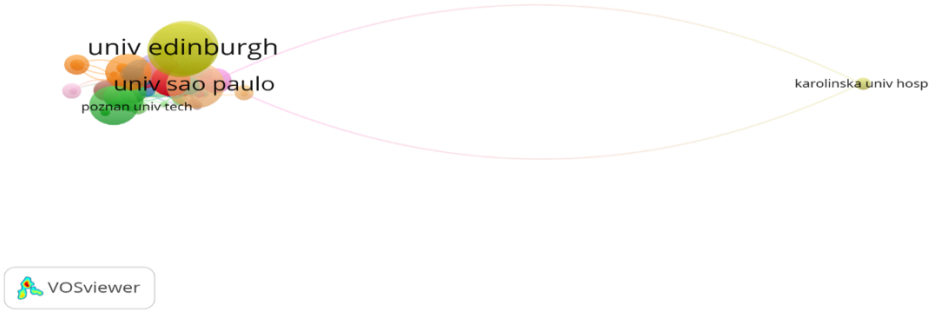

Figure 19. Institution citation analysis

Institutional citation analysis analyzes the total number of citations to documents produced by an institution. When the citation analysis of institutions is analyzed (Figure 19), the co-author is similar to the institutional citation analysis. With 878 citations, The University of Edinburgh ranks first, Imperial College London ranks second with 872 citations and University of São Paulo ranks third with 655 citations.

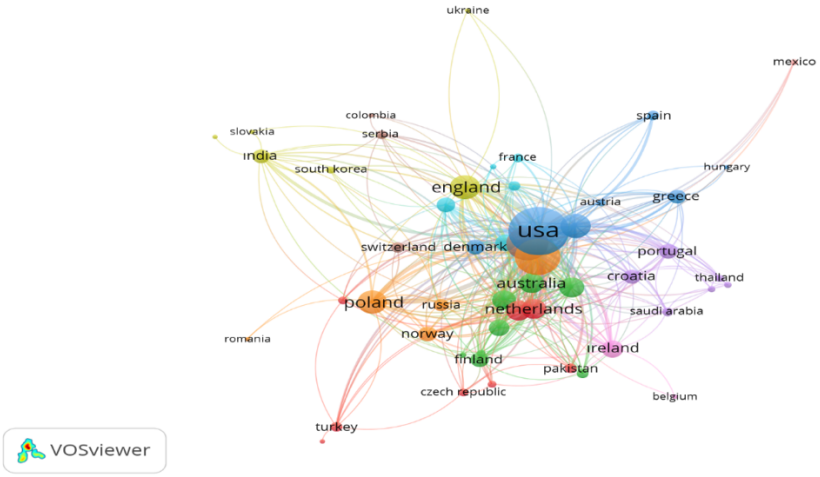

Figure 20. Country attribution link strength analysis

Country citation link strength analysis analyzes the strength of countries' citation links with other countries. The minimum number of articles for countries was chosen as 1. 53 out of 81 countries were found to be connected. Among 52 organizations, a strong network emerged. Among these countries, the United States with 157 documents, 3033 citations and 404 link strengths, Brazil with 70 documents, 924 citations and 229 link strengths, and Germany with 99 documents, 738 citations and 190 link strengths ranked first.

When the countries are ranked in terms of citations (Figure 20), England with 3033 citations, England with 1406 citations and Brazil with 924 citations come to the fore. In terms of the number of documents, the results are similar. The United States with 157 documents, Germany with 99 documents and Brazil with 70 documents are in the first place.

Bibliographic Match

Bibliographic matching is measured through the common references of two documents and refers to thematic or methodological similarities. This method is used to map emerging fields by identifying clustering of closely related studies (Donthu et al., 2021). The minimum number of citations of a sources was set as 10 when conducting bibliographic match analyses.

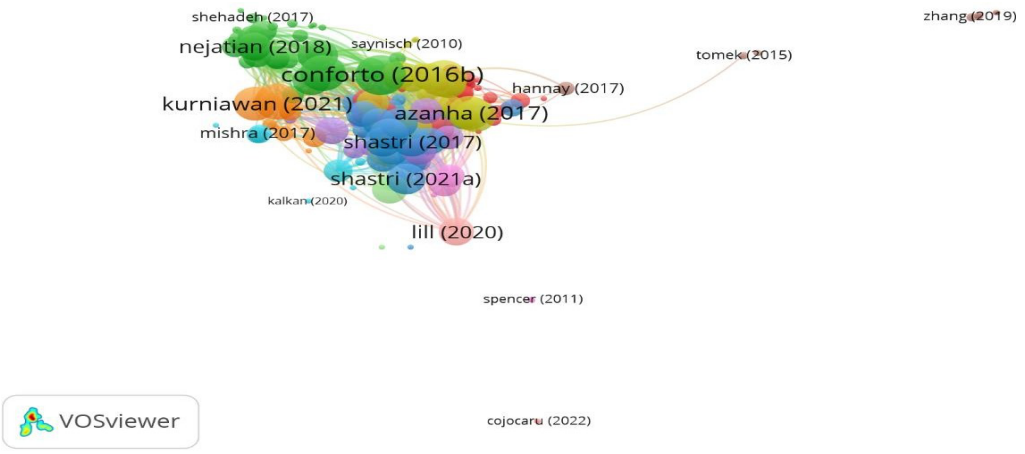

Figure 21. Bibliographic match document link strength analysis

Bibliographic match document link strength analysis analyzes the number of references that two documents have in common. It helps to understand which documents focus on similar research areas.

According to the analysis (Figure 21), 191 out of 867 articles were found to be linked to each other and a strong network was formed between 171 articles. Conforto's (2016b) study ranks first with 332 link strengths, followed by another study by the same author, Conforto (2014), with 280 link strengths. strengths.

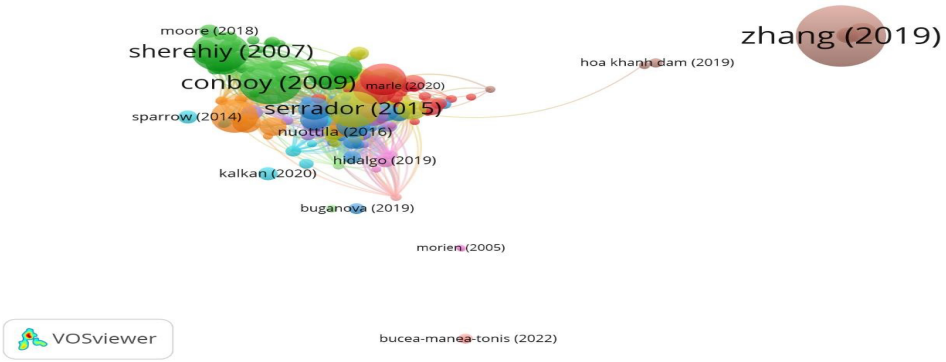

Figure 22. Bibliographic match citation analysis

In bibliographic match citation analysis, it analyzes the total number of citations that two documents receive over their common references. When the bibliographic match analysis is analyzed in terms of citations, Zhang (2019) with 867 citations, Conboy (2009) with 420 citations, and Sherehiy (2007) with 355 citations are at the forefront.

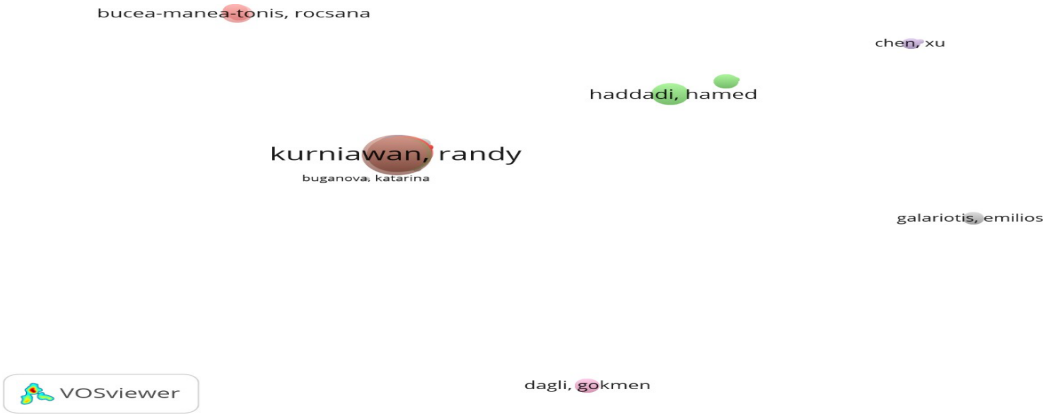

Figure 23. Bibliographic match author link strength analysis

During the bibliographic author analysis, the minimum number of articles owned by the authors was selected as 1. Among 2280 authors, 560 were found to be connected. Among 478 authors, a strong link was observed.

Bibliographic match author link strength analysis analyzes the number of sources that two authors cite in common. It helps to understand whether the two authors are working on the same or similar topics. According to the bibliographic author link strength analysis (Figure 23), Kurniawan, Randy ranks first with 4156 link strength, followed by Hamsal, Mohammad and Kosasih, Wibowo with 3006 link strength.

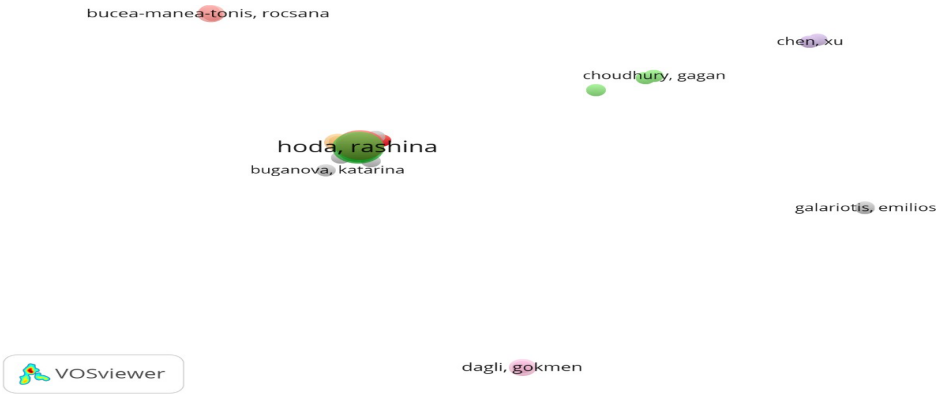

Figure 24. Bibliographic match document analysis

Bibliographic match document analysis analyzes the bibliographic match strength and co- references of a single document. When the authors are analyzed in terms of the number of documents in the bibliographic match analysis (Figure 24), Amaral, Daniel Capaldo ranks first with 11 documents. Hoda, Rashina ranks second with 7 documents. Then Shermuly, Carsten C. and Kuchta, Dorota with 5 documents.

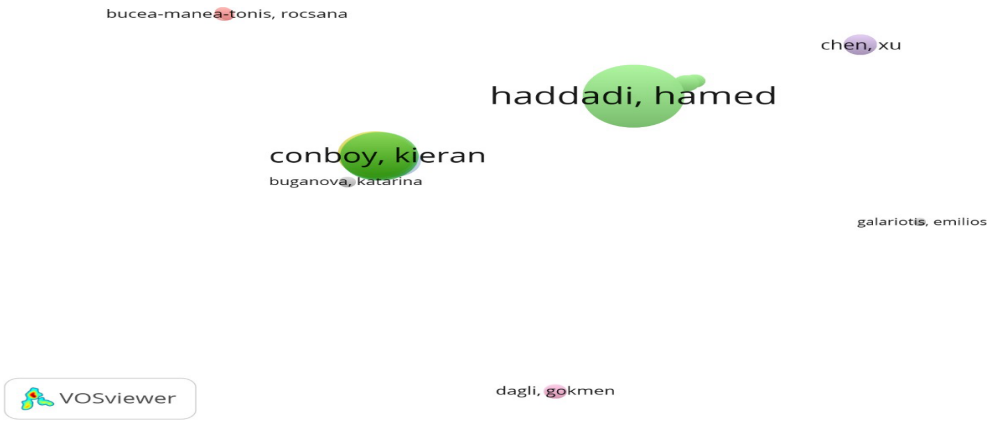

Figure 25. Bibliographic match citation analysis

According to the bibliographic match analysis (Figure 24), when the authors are ranked according to the number of citations, Zhang, Chaoyun; Patras, Paul and Haddadi, Hamed are in the first place with 867 citations, while Conboy, Kieran is in the third place with 518 citations. Apart from the authors who maintain their first place, Karwowski, Waldemar ranks fourth with 491 citations and Sherehiy, Bohdana ranks fifth with 466 citations.

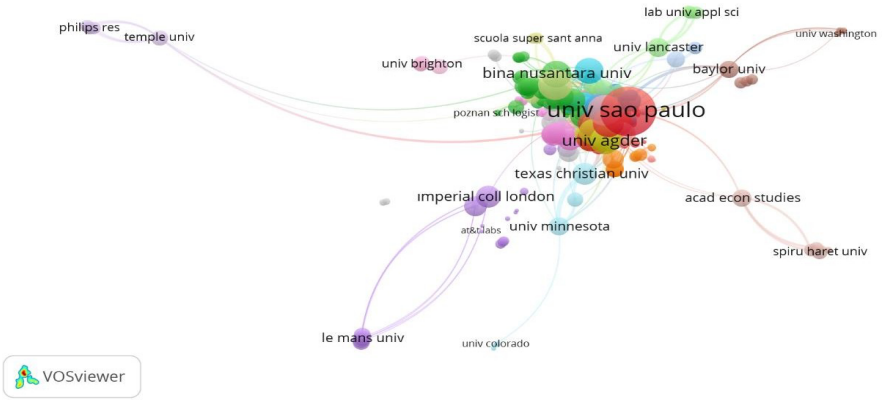

Figure 26. Bibliographic match institution link strength analysis

Bibliographic matching institutional link strength analysis analyzes the number of references that two institutions have in common. It provides an understanding of which institutions work in similar research areas and opportunities for scientific collaboration. While examining the institutions in bibliographic matching analyses, the minimum number of articles was selected as 1. 314 out of 1055 organizations were found to be connected. 284 organizations showed a strong network.

As a result of the analysis (Figure 25), the University of São Paulo ranks first with 5252 link strengths, followed by The University of Auckland with 1807 link strengths and Politecnico di Milano with 1793 link strengths.

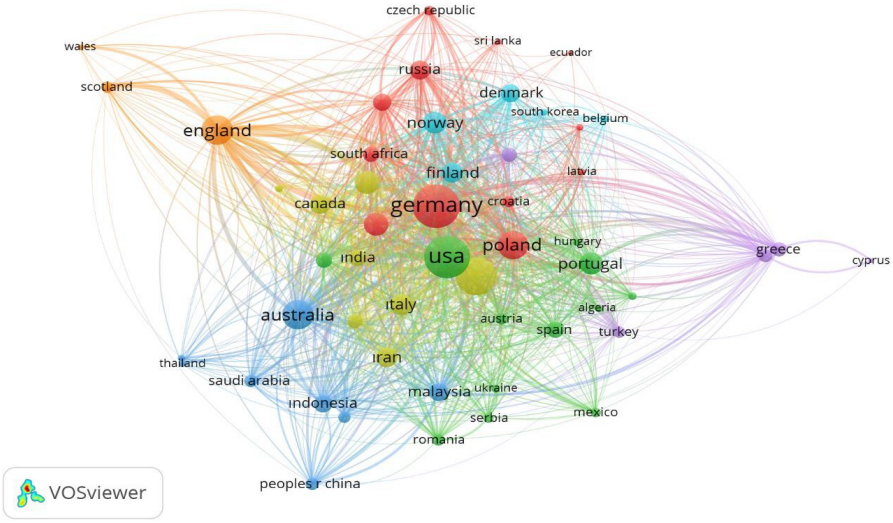

Figure 27. Bibliographic match country link strength analysis

The bibliographic matching country link strength analysis analyzes the number of references that two countries have in common. The minimum number of articles for countries is set as 1. 53 out of 81 countries were found to be linked. Among these countries, Germany ranks first with 13,887 links, followed by the United States with 13,653 links, Brazil with 10,699 links, and the United Kingdom with 6,588 links (Figure 26).

Co-Citation Analysis

Co-citation analysis is a method that assesses the relationships between documents, authors or sources. This analysis visualizes knowledge transfer through network structures and contributes to the identification of changes over time (Zupic & Cater, 2015). During the co- citation analysis, the minimum number of citations of a reference was set as 15.

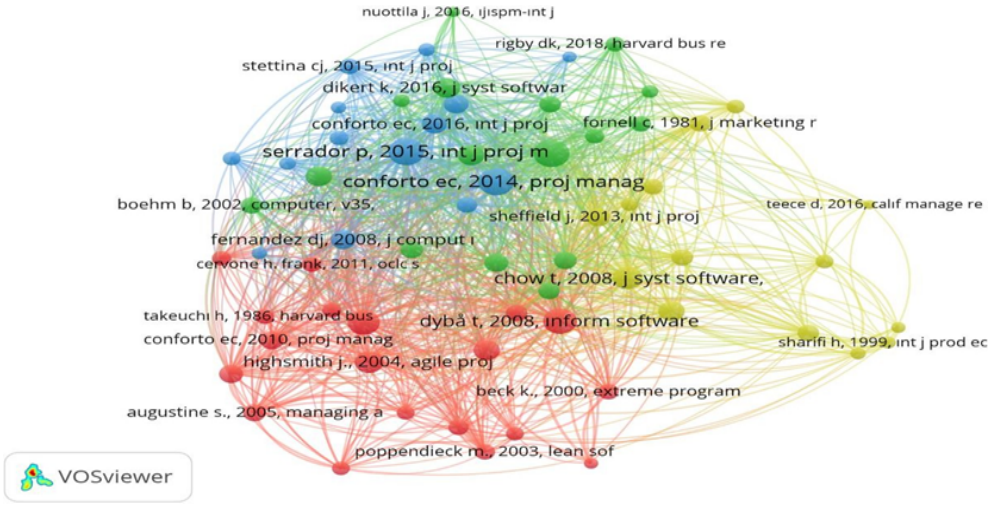

Figure 28. Common attribution reference link power analysis

Co-citation reference link strength analysis measures the number of times two references are cited together in the same article. If two references are cited together in many studies, they are likely to provide important information on the same or similar topics. This analysis helps to understand key sources in the literature and how they are related. When the co-citation analysis was analyzed in terms of references (Figure 27), 63 links were identified among 25,538 references. Among these links, the article reference published by Serrador, P. and Pinto, J. K. in 2015 ranked first with the highest link strength of 379. Fowler, M. (2001) and Conforto, E.C. (2014) are in second place with 367 links, and Dyba, T. (2008) is in third place with 336 links.

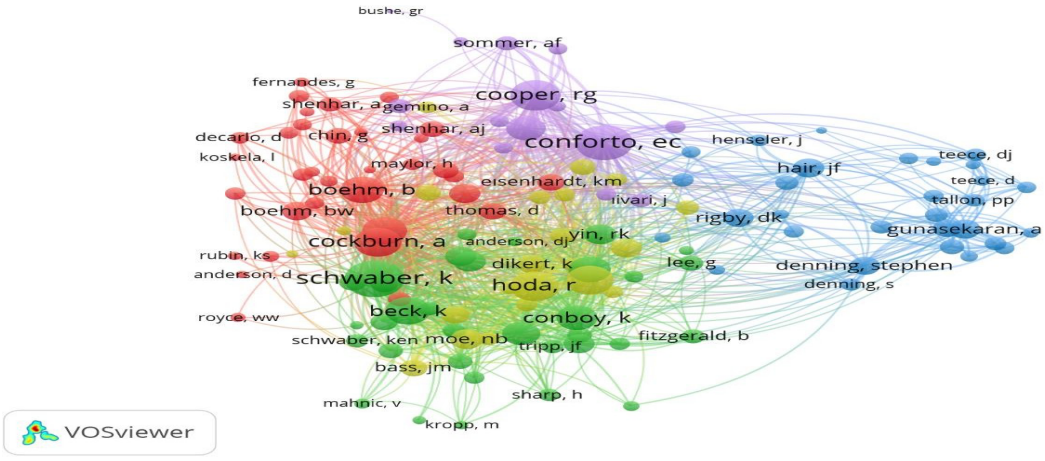

Figure 29. Co-citation author analysis

Co-citation author analysis analyzes the number of times two authors are cited together in the same article. This analysis identifies authors who are frequently co-cited in the literature and provides an understanding of their influence in a particular field. According to the co-citation author analysis (Figure 28), 134 links were detected among 18,279 authors. Schwaber, K. ranks first with 2,271 link strengths, followed by Conforto, E.C. with 2,063 link strengths and Cooper, R. G. with 1,599 link strengths. In addition, the link strengths of other authors are also quite high.

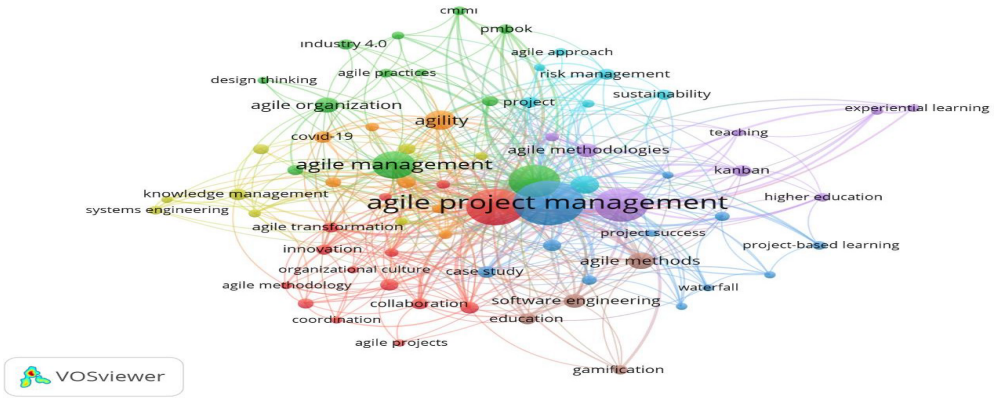

Figure 30. Keyword analysis

While analyzing the keywords used by the authors, the minimum number of repetitions of a word was determined as 5. As a result of the analysis, a strong connection was found between 71 keywords among 2267 keywords.

Keyword analysis analyzes how often keywords used in research occur together. This analysis is critical for understanding the main trends and themes in a research field. Especially if there are strong links between certain keywords, this indicates that the topics are closely related. According to the analysis, "agile project management" was the most recurring word and had the highest number of links. It is followed by Project management, scrum, agile. The keywords are divided into 8 clusters. The keywords in the first three clusters are shown in the table below (Table 2).

Table 2. Keyword clusters

Cluster 1	**Cluster 2**	**Cluster 3**
Agile Development	Agile	Agile Project Management
Agile Methodology	Agile Management	Case Study
Agile Projects	Agile Organization	Critical Success Factors
Agile Transformation	Agile Practies	Hybrid Project Management
Collaboration	Change Management	Information Systems
Complexity	CMMI	Project Success
Coordination	Design Thinking	Project-based Learning
Innovation	Industry 4.0	Scrum Master
Organizational Change	Lean	Software Project Management
Organizational Culture	Performance	Traditional Project Management
Organizations	PMBOK	Waterfall
Project Management	Systematic Literature Review	
Software Development		
Uncertainty		

Source: Web of Science, VOSviewer.

As a result of the bibliometric analysis on agile management and agile organization, the first three clusters are included to evaluate the prominent themes in the literature through the most used keywords. Each cluster sheds light on different dimensions of the approaches.

The first cluster focuses on dynamic management and project management practices. Keywords in this cluster such as Agile Development, Agile Methodology, Agile Projects and Agile Practices emphasize the foundations of agile approaches. In addition, keywords such as Organizational Culture, Organization and Organizational Change indicate that there is also an intensive study on agile organization.

The second cluster focuses on the scope of modern management and the spectrum of sophistication and change. The keywords Change Management, Agile Organization and Performance, which are prominent in this cluster, reflect the central role in organizational change. Furthermore, the concept of Design Thinking, flexible methods and their links with problem solving and solution process design are shown. Furthermore, the Systematic Literature Review shows the extent of comprehensive reviews in the literature based on the theoretical framework.

The third cluster addresses the interaction of flexible management with traditional project management and the development of hybrid management models. Keywords such as Hybrid Project Management, Traditional Project Management and Waterfall emphasize the development of the use of flexible methods in combination with traditional methods. In addition, the presence of the Case Study keyword indicates that agile management has been examined in the literature through case studies and the reasons for its success or failure have been tried to be revealed.

The literature on agile management and agile organization covers a wide range of technical, organizational and methodological dimensions. Agile approaches are most often studied in the field of software development or project management techniques, but are also addressed as organizational change and management techniques. The prominence of hybrid management models has led to a growing interest in the literature on how flexible methods can be integrated with traditional methods. This study reveals that themes such as sophistication, collaboration and transformation in the field of management are strongly present in the literature and that theoretical and practical applications in this field are diversifying.

Conclusion and Discussion

This study provides a systematic overview of the agile management and agile organization literature, painting a comprehensive picture of the current state of the field. Unlike studies in the literature that focus on software development and project management, this research highlights understudied areas such as hybrid management models, leadership processes and integration across disciplines. The study contributes to the identification of gaps in the literature by making scientific collaboration networks and thematic concentrations visible through bibliometric analysis.

In this context, the importance of the research is highlighted in several points. First, it appears that agile management is not only a methodology but can be used as a strategic tool in organizational transformation processes. By providing findings that support the growing interest in the development of hybrid management models, it suggests new directions for future research. It also sheds light on the applicability of agile methods in different sectors, bringing an interdisciplinary perspective to the literature.

Consequently, this study broadens the research scope in agile management and organization by offering both a theoretical framework and practical contributions. Beyond filling important gaps in the literature, it aims to create a roadmap for the advancement of this field. In this respect, the study will constitute a critical reference point in agile management literature in both academic and applied fields.

Agile management and organization literature has largely focused on software development and project management. In addition, significant contributions have been made in areas such as management, information systems and organizational change. However, it is noteworthy that there is a limited number of studies on themes such as leadership and sustainability. This situation points to a significant gap in the literature.

Co-authorship analyses reveal strong inter- and intra-disciplinary collaboration networks in agile management literature. Especially the studies conducted during the COVID-19 pandemic emphasized the applicability of agile management approaches in the healthcare sector and made significant contributions in this field. However, these collaborations are mainly concentrated in countries such as

the United States, the United Kingdom and Brazil. This situation raises the need to increase the contributions of other countries to the literature.

It has been determined that the most cited studies in the literature are articles addressing the conceptual framework and success factors of agile management and organization. Especially Conboy (2009) and Conforto (2014) have made valuable contributions to the literature in theoretical and practical terms. Bibliographic match analysis shows that there is a growing interest in hybrid management models. This finding suggests that the integration of flexible and traditional methods will be an important focus for future research.

In the literature analysis, it is seen that keywords such as agile project management, organizational change, agile methodology and agile development are used extensively. This reveals that the basic methodological principles of agile management and its impact on the transformation processes of organizational structures have a central role in the literature. In addition, it is understood that research enriched with case studies is effective in examining the reasons for success and failure of agile methods in detail.

In conclusion, a systematic assessment of the current state of agile management and organization literature shows that there is an intensive accumulation on software development and project management, but more research is needed in areas such as leadership, sustainability and interdisciplinary practices. Hybrid management models and the integration of agile methods into different disciplines stand out as a priority orientation for future research.

In line with the identified gaps in the literature, several future research directions are recommended. Firstly, the influence of agile management on leadership processes and its interaction with various leadership styles merits a more in-depth exploration. Understanding how agile principles reshape leadership dynamics could offer valuable insights for organizational development. Secondly, the integration of agile methodologies into sustainability strategies represents a promising but underexplored area. Further studies could examine how agility contributes to the achievement of long-term environmental and social goals. Additionally, the implementation and effectiveness of agile management in relatively underrepresented sectors—such as healthcare, education, and public administration—should be investigated to broaden the scope of existing knowledge. Finally, there is a notable need to amplify the contributions of developing countries to the agile management literature. Encouraging more inclusive and cross-national collaborations can enhance the global applicability and relevance of agile practices.Since secondary data is used in this study, ethics committee approval is not required.

Conflict of interests: The author(s) has (have) no conflict of interest to declare.

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Ethics Committee Approval: The study does not require ethics committee approval.

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